

# Do Students Learn Better with Pecha Kucha, an Alternative Presentation Format?

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## INTRODUCTION

There are pedagogical advantages to incorporating oral presentation assignments into a course curriculum: it reinforces students' research skills, challenges them to better organize information and articulate their learning, encourages them to explore their creativity, helps them learn through peer presentations, promotes retention of knowledge, and even enhances their postgraduation employability (1, 2). Undeniably, creating and delivering a clear and effective oral presentation is considered a highly desirable workplace skill, especially in STEM (3). The most common format we faculty use is for each student, or each group of students, to deliver a 10- to 15-minute PowerPoint presentation. However, as with other course assignments, there are potential pitfalls. For example, students have tendencies to wait until the last minute to finish the assignment, not follow instructions carefully, and not always practice before their presentations. Equally disappointing, students do not seem to enjoy sitting through their peers' presentations and learning from them. A different presentation format may help soften some of these problems. Pecha Kucha ("chit-chat" in Japanese) is a presentation format that consists of 20 slides shown for 20 seconds each (slides can be advanced automatically every 20 seconds in PowerPoint using the "Transitions" tab, selecting "After" and entering 20 seconds, and then clicking "Apply to All"). One Pecha Kucha presentation therefore lasts 6 minutes and 40 seconds, with most slides presenting only images. Because of the limit on the number of slides and on the presentation time, students need to make thoughtful decisions about what to include and what not to include, and they need to practice in advance.

So far, most literature published on Pecha Kucha or alternative simplified visually rich presentation formats in the classroom has focused on improving student presentation

quality and communication competence (4–7). This study, however, intended to investigate the learning process that students were engaged in when preparing a Pecha Kucha presentation. In our first-year seminar program, all students receive instruction and practice on researching and evaluating information in print and online. Therefore, we assumed that finding credible information was not a barrier to students, and we hypothesized that learning could take place when making decisions to keep or to leave out information for the presentation. More specifically, throughout the process of researching, organizing, and preparing the presentation, the idea was that students would actively evaluate the newfound information (evidence-based engagement), decide whether or not to include it in the presentation (content relevancy), organize the presentation in a logical and coherent manner (audience engagement) while adhering to the 20 × 20 rule of the presentation (logistics), and try their best to come across as knowledge experts in front of their peers (credibility). Therefore, we focused on the learning process in these five areas.

## PROCEDURE

With IRB approval, our students in one section of each of the following three courses participated in this study in 2011–2012: Infectious Disease Ecology (9 students), Genetics (19 students), and Microbiology (18 students). Liao and Lewis team-taught Infectious Disease Ecology, and Liao taught both Genetics and Microbiology. Within each class, each group of two to four students chose one independent project, and two presentations were scheduled per project, with the first presentation taking place in the middle of the semester and the second at the end. In Genetics, the first presentation was in the Pecha Kucha format and the second in the traditional PowerPoint format. In Infectious Disease Ecology and in Microbiology, the first presentation was in the traditional PowerPoint format while the second was in the Pecha Kucha format.

Five areas of the students' decision-making and learning process during the preparation periods were assessed in the reflection survey developed by Liao and Winiski (an instructional consultant), with the specific aim of capturing

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TABLE I.  
Postpresentation survey.

**A. Reasons for Including or Not Including Information****Perceived Learning Category<sup>a</sup>**

*To put together this presentation, you must have made tough decisions on what to present or not present. Reflect upon your decision-making strategies and indicate how much you agree with each statement on a scale from 1 to 5, where 1 = did not play a role in my decision making and 5 = definitely played a role.*

**I decided NOT TO present certain information because ...**

1. ... it was so basic that everybody in class should know it.	Audience engagement
2. ... it was too broad and general.	Audience engagement
3. ... it was not very relevant to the topic.	Content relevancy
4. ... it was too advanced and it might go over some students' heads.	Audience engagement
5. ... it did not address the future research direction of the topic.	Evidence-based evaluation
6. ... it was not supported by evidence that I found convincing.	Evidence-based evaluation
7. ... it was not among resources of which biology professors would approve.	Logistics
8. ... it did not demonstrate principles that I learned in the course.	Evidence-based evaluation
9. ... it did not demonstrate principles that I learned in other courses.	Evidence-based evaluation
10. ... it was not up-to-date.	Evidence-based evaluation
11. ... it was so advanced that even I was confused.	Credibility
12. ... it did not have impressive images to support the ideas I wanted to convey.	Credibility
13. ... it would not contribute to a focused and manageable story.	Content relevancy
14. ... it wouldn't fit in the allotted time.	Logistics
15. ... it would not demonstrate my creativity, which is important to me when I present.	Credibility
16. ... I did not know how to pronounce the words.	Credibility
17. ... if someone asked for further explanation, I would not know how to answer clearly.	Credibility
18. ... it did not address social issues in which I am interested.	Content relevancy
19. ... it did not address scientific advancement (technologies, concepts, etc.) in which I am interested.	Content relevancy

**I decided TO present certain information because...**

1. ... it was essential background information on the topic.	Audience engagement
2. ... it was the insight I gained after I compared and contrasted concepts from different courses (science and non-science), so it was valuable to share.	Evidence-based evaluation
3. ... it was something that would impress my professor and fellow classmates.	Credibility
4. ... it was something for which I could find informative images.	Credibility
5. ... it was something that, when put together, would flow as a comprehensive story.	Content relevancy
6. ... it was current.	Evidence-based evaluation
7. ... it was the summary of my interpretation/evaluation of the gathered information.	Evidence-based evaluation
8. ... it was from reliable source(s).	Logistics
9. ... it was supported by reliable data.	Evidence-based evaluation
10. ... it was something that all students in the class would be interested in knowing.	Audience engagement
11. ... it was relevant.	Content relevancy
12. ... it was not a piece of ideal information but I had a hard time finding enough information on this topic, so I included it.	Logistics
13. ... it would elicit in-depth discussions.	Audience engagement
14. ... it took me awhile to figure it out, and I did not want my effort to go unnoticed.	Credibility
15. ... it is the future direction where the science is heading.	Evidence-based evaluation
16. ... it has gotten a lot of attention from the media and general public.	Audience engagement
17. ... it would address social issues in which I am interested.	Content relevancy
18. ... it would address scientific advancement (technologies, concepts, etc.) in which I am interested.	Content relevancy
19. ... it would go well with an interesting story or a funny joke.	Audience engagement

**B. After preparing and giving my presentation, I believe I am an expert on this topic. I feel confident to explain it to and am ready to answer questions from...**

(Please rank your confidence level from 1 to 5, with 1 being the least confident and 5 being the most confident.)

1. ... a high school student who has no background in biology.
2. ... a high school student who has had one year of biology.
3. ... my roommate who is not a biology major.
4. ... my roommate who is not a biology major but is majoring in science.
5. ... my parents who are not experts in science.
6. ... a staff member on the Furman campus.
7. ... my family doctors.
8. ... my Furman professors who do not have an office in the science building.
9. ... my Furman professors in Chemistry, Physics, or Earth and Environmental Sciences.
10. ... my Furman biology professors.
11. ... the President of our university.

Is there anything more you would like to share about this learning experience?

(End of the semester question) Which presentation style (conventional or Pecha Kucha) better helped you learn the materials and communicate with your classmates? Why?

(End of the semester question) Please reflect on the presentations of your classmates. From which presentation format did you learn more: conventional or Pecha Kucha?

<sup>a</sup>The survey form students received did not include the codes of the five areas that we assessed at the end of each statement.

the perceived learning of our students: evidence-based engagement, content relevancy, audience engagement, logistics, and credibility. In the survey, which was given after each presentation, there were 19 statements for the reasons to keep information in the final presentation and 19 statements for the reasons not to. Each statement represents an area of the decision-making process (Table 1). Also assessed was the confidence level about the presentation in general (Table 1). For each class, results of the two surveys (pre- and post-presentation) were treated as independent samples, because assessment questions were collected anonymously and individually, and the responses of individual students to the pre- and post-surveys could therefore not be paired. We used nonparametric Mann-Whitney tests for all statistical comparisons. Also, sample sizes for the two surveys differed, either because some students did not respond to a question or because the class size changed between the two surveys. JMP 9.0.0 was used for the analyses. In addition to asking students to rank their levels of agreement with each statement, we also included two open-ended questions to gain insights into their perceived learning experiences, both from presenting and from listening to their peers: (1) Which presentation format better helped you learn the materials and communicate with your classmates? Why? and (2) From which presentation format did you learn more from your classmates? We did not provide a specific rubric for each presentation format. Instead, we adapted a general department-wide presentation evaluation form that broadly assessed content, organization, and clarity.

## CONCLUSIONS

We found some evidence of differences in the learning experience between traditional and Pecha Kucha formats (Table 2). Mostly, these differences related to audience engagement, especially the prioritization of presentation material that could be delivered successfully under the time constraints of the Pecha Kucha format. There were no significant differences in confidence between presenting the information to perceived experts or perceived novices, although students reported in answering the open-ended questions that they were slightly more confident in presenting to experts after the second presentation, regardless of the format. With respect to their own learning, students in all classes reported that both formats helped them learn. Opinions on the time limit of Pecha Kucha were polarized: some welcomed it and some did not. Specific words used to describe the Pecha Kucha format were “focus,” “streamline,” and “forced.” With respect to learning from their peers, there were no significant differences between these two formats. However, opinions were also polarized regarding the time limit for other students’ presentations: most, but not all, liked the shorter presentations. Specific words used to describe the Pecha Kucha format from the audience perspective were “better practiced” and “better prepared.” In general, students did not like the time limit on their own presentations but liked it on peer presentations.

Although most results from the survey of perceived learning did not differ significantly between these two

TABLE 2.

Comparison of student responses to statements in the reflection surveys following the two presentation formats.

Statement	Course	TD median (n)	PK median (n)
<b>A stronger factor when preparing for the traditional format presentation:</b>			
1. I decided NOT to present certain information because it was so basic that everybody should know it. (Audience engagement)	Genetics ( $p=0.017$ )	5 (n=16)	3 (n=18)
2. I decided TO present certain information because it would go well with an interesting story or a funny joke. (Audience engagement)	Microbiology ( $p=0.05$ )	4 (n=18)	3 (n=15)
<b>A stronger factor when preparing for the Pecha Kucha format presentation:</b>			
1. I decided TO present certain information because it was essential background information on the topic. (Audience engagement)	Genetics ( $p=0.037$ )	4 (n=15)	5 (n=18)
2. I decided NOT to present certain information because it was too advanced and it might go over some students' heads. (Audience engagement)	Genetics ( $p=0.038$ )	3 (n=16)	4 (n=18)
3. I decided NOT to present certain information because it did not address social issues in which I am interested. (Content relevancy)	Microbiology ( $p<0.0001$ )	2 (n=18)	4 (n=15)
4. I decided NOT to present certain information because it wouldn't fit in the allotted time. (Logistics)	Infectious Disease Ecology ( $p=0.0095$ )	4 (n=9)	5 (n=8)

Only comparisons in which the medians of the two groups differed significantly ( $p<0.05$ ) are shown. PK = Pecha Kucha format, TD = traditional format.

formats, the presentations were more concise and the presenters' readiness levels were noticeably better in the Pecha Kucha format. Because slides advanced automatically, most students practiced multiple times in advance. Some even memorized their presentations, instead of reading off the screen. In general, students reported investing more time in preparing a Pecha Kucha presentation. Consequently, we observed presentations of better flow and presenters with better familiarity with the content, and we halved the class presentation time. Even though the data from the aspects of learning that we assessed did not support our initial hypothesis fully, we believe that this small tweak enhances learning and presentation skills. Additionally, the time saved would make small group oral presentations in big classes possible.

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